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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,011	10/21/2003	Robert M. Steinhoff	TI-35705	5065

23494 7590 10/12/2006

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EXAMINER	
LEJA, RONALD W	
ART UNIT	**PAPER NUMBER**
2836	

DATE MAILED: 10/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/690,011	STEINHOFF, ROBERT M.	
	Examiner	Art Unit	
	Ronald W. Leja	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/21/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6-10 and 20-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Metz et al. (5,400,202).

Metz et al. disclose (see Fig.s 4a and 4b) an ESD protection device comprising an SCR (10) having an external pumping circuit comprising a transistor (18). The transistor is an nMOSFET for Claims 3 and 7. Figures 4a & 4b illustrate the connections of the nMOSFET along with the resistor and capacitor for Claims 7-9 and 22. As to the conductivity and regions of Claims 1, 3, 6, 10, 20 and 21, Figure 4b illustrates the base region being a p-type substrate (p-sub), the well region being an n-well (NWELL), (the particular type moats – for Claims 20, & 21) and the first region and fourth region comprising p+ type dopants, and the second region, third region and fifth regions comprising n+ type dopants.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4, 5, 11-19, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Metz et al. in view of Russ et al. (6,909,149 B2).

These set of claims are drawn to details of transistor (18) and the width of the various regions (sixth and seventh) of the transistor and with respect to the width of the fifth region of the SCR . Claims 5 and 14 essentially recite that the width of the fifth region is smaller that the widths of the second, third and fourth regions and also smaller than the sixth and seventh regions of the transistor. Metz et al. disclose that the pumping transistor (18) can be provided externally to that of the SCR so as to minimize breakdown effects (Col. 4, lines 41-45) and in (Col. 5, lines 51-59) disclose that the FET (18) has a specific width value, but that it can also have different values. Russ et al. teach an ESD protection circuit comprising an SCR with a NMOSFET transistor pumping circuit, i.e. Fig. 1A. The SCR of Russ et al. is acknowledged as not being of the same construction as that of the SCR of Mertz et al., but this is considered irrelevant to the teachings being relied upon, as one would be motivated to look to any ESD SCR protection circuit. Russ et al. teach that the external pumping transistor has been provided larger tripping "tap" regions with the SCR so as to accommodate larger pumping elements to enhance the ESD protection; the larger taps can withstand the larger pumping currents (Col. 13, lines 11-30). Column 9, lines 10-64 describe the desirability that the transistors forming the SCR have the smallest base sizes as possible resulting in decreased turn-ON time and increased current Beta gains. This leads to more efficient ESD protection. Therefore, it is the opinion of the Examiner that it would have been obvious to incorporate these teachings into any SCR-pumped ESD protection circuit, such as, the one disclosed by Metz et al., so as to gain in decreased turn-ON time of the SCR and increased current Beta gains leading to a more efficient ESD protection device. The sixth and seventh regions of the "larger" pumping transistor would than indeed be larger than the desired smallest base

regions (i.e. fifth region) of the SCR. It then follows, as far as Claim 5, that the fifth region being the pumped base, would obviously be design with the smallest base width with respect to the other regions (i.e. 1st thru 4th). As far as the claimed ratios found within Claims 23 and 24, such limitations would have been obvious as mere optimization of values; it would have been obvious to one having ordinary skill in the art at the time the invention was made to choose a ratio value as long as it compatible with the requirements of other elements in the circuit so as to gain in the benefits of decreased turn-ON time of the SCR and increased current Beta gains leading to a more efficient ESD protection device. It has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ronald W. Leja whose telephone number is (571)272-2053. The examiner can normally be reached on Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571)272-2800. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ronald W Leja
Primary Examiner
Art Unit 2836

9/29/06

rwl
September 29, 2006